# NHDOT SPR2 PROGRAM
# RESEARCH PROGRESS REPORT

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| **Project #**<br>SPR 26962W | | **Report Period** Year 2020<br>☐ Q1 (Jan-Mar) X Q2 (Apr-Jun) ☐Q3 (Jul-Sep) ☐ Q4 (Oct-Dec) |
| **Project Title:**<br>Log Jam Monitoring | | |
| **Project Investigator:** Tom Ballestero<br>**Phone: (603) 862-1405** | | **E-mail:** tom.Ballestero@unh.edu |
| **Project Start Date:**<br>May 1, 2019 | **Project End Date:**<br>April 30, 2022 | **Project schedule status:**<br>☐ On schedule ☐ Ahead of schedule X Behind schedule |

**Brief Project Description:**

Extreme bank erosion along Route 16 in Errol is to be stabilized using an engineered log jam (ELJ). This is the first installation of an ELJ by NH DOT, and as such NH DOT is interested in the benefits of the structure pertaining to performance, habitat, and costs. The project shall be monitored for three years, including eight months of pre-construction monitoring and two years of post-construction monitoring. Monitoring activities are to cover hydraulic, structural, flora, and fauna; in addition, the monitoring provides inspection information to DOT to assess any need for maintenance or repairs. The ultimate objective of the project is to document all salient aspects of ELJs relative to road planning, permitting, construction, and maintenance, plus documenting stream system changes resulting from the ELJ.

When the proposal was written, the original project construction was planned for summer 2019, however that was pushed back until summer 2020. Construction started the end of June 2020. As such, in order to obtain two years of post-construction monitoring, the project end date will need to be extended to April 2023. In addition, this will require one more year of monitoring which will require additional funding. It is recommended to wait on estimating funding needs until the end of the summer 2021 field season.

**Progress this Quarter (include meetings, installations, equipment purchases, significant progress, etc.):**

Due to the unseasonably warm weather, on March 1, 2020 three pressure transducers were set in the Magalloway River: one close to the Errol Dam and the other two in the model reach. The transducers were installed to understand system hydraulics and to yield calibration information for the hydraulic model. Also at this time, the game camera was downloaded and re-set. A TAG meeting was held May 2020. In May 2020 another annual permit was secured from the USFW&S.

June 2020 included three UNH field expeditions. The first to: read-out and re-set the pressure transducers; read and re-set erosion pins; download the site game camera; re-survey the streambank; tie-in pressure transducers to absolute elevation datum; deploy submersible GoPros at the study bank; and setting a time lapse game camera of the site A fourth transducer was added at the downstream end of the model reach. The second field trip was to: read-out and re-set the pressure transducers; download and remove the site game camera; deploy submersible GoPros at the study bank; and read-out the time lapse game camera of the site. The third field trip was to re-do the site bathymetry. In addition, on this trip we added ADCP measurements of two kinds: one was attached to the boat and collected velocity information along with the bathymetry, the other was a bottom-mounted set-up deployed in two location that measured velocity variation in the vertical at 0.5-meter intervals.

**Items needed from NHDOT (i.e., Concurrence, Sub-contract, Assignments, Samples, Testing, etc…):**

The construction schedule and date are needed to schedule the post-construction monitoring. At this writing, the plan is to perform the post-construction monitoring in late October 2020.

**Anticipated research next three (3) months:**

In the next quarter, we plan to: reduce summer 2020 field data; continue modeling efforts; and plan for fall 2020 monitoring. We will also review the hours of GoPro video to estimate underwater bank fauna. Interpretation of these images could use the assistance of USFW&S and NHF&G TAG members for identification.

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**Circumstances affecting project:**

The one-year construction delay affects project timing, aside from the one-year delay in the schedule, having more pre-construction data is actually a good thing as far having a solid pre-construction database with which to compare to post construction data. The UNH COVID shut down did not affect this project.

**Budget, scope, and timing are all on schedule.**

| Tasks (from Work Plan) | Planned % Complete | Actual % Complete |
|---|---|---|
| Task 1 Kick off meetings and information gathering | 100% complete | 100% complete |
| Task 2 (in the fourth quarter, proceeding as planned) | 80% | 62% |